

LONDON- WEST MIDLANDS ENVIRONMENTAL STATEMENT

Volume 5 | Technical Appendices

CFA12 | Waddesdon and Quainton

Construction assessment (SV-003-012)

Sound, noise and vibration

November 2013

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Department
for Transport

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1 Introduction

- 1.1.1 The sound, noise and vibration appendices comprise four sections. The first of these is an introduction to the relevant route-wide methodology, assumptions and assessment (Volume 5: Appendix SV-001-000). This relates to the sound, noise and vibration assessment for all community forum areas (CFA).
- 1.1.2 For the Waddesdon and Quainton community forum area (CFA12), the other three sections are as follows:
- baseline sound, noise and vibration (Volume 5: Appendix SV-002-012);
 - construction sound, noise and vibration (Volume 5: Appendix SV-003-012) (this appendix); and
 - operational sound, noise and vibration (Volume 5: Appendix SV-004-012).
- 1.1.3 The outcomes of the assessment are summarised in Volume 2: CFA Report 12, Waddesdon and Quainton (CFA Report 12), Section 11.
- 1.1.4 Maps referred to throughout the sound, noise and vibration appendices are contained in the Volume 5 Map Book: Sound, noise and vibration.
- 1.1.5 This appendix presents the likely noise and vibration impacts, effects and significant effects arising from the construction of the Proposed Scheme for the Waddesdon and Quainton area on:
- people, primarily where they live ('residential receptors') in terms of:
 - individual dwellings;
 - on a wider community basis, including any shared community open areas; and
 - community facilities such as schools, hospitals, places of worship, and also commercial properties such as offices and hotels, collectively described as 'non-residential receptors' and 'quiet areas'.
- 1.1.6 The assessment of likely impacts, effects and significant effects from construction noise and vibration on agricultural, community, ecological or heritage receptors and the assessment of tranquillity are presented in the following documents within Volume 5:
- | | |
|-----------------------------------|---------------------|
| • Agriculture, forestry and soils | Appendix AG-001-012 |
| • Community | Appendix CM-001-012 |
| • Ecology | Appendix EC-005-012 |
| • Heritage | Appendix CH-003-012 |
| • Landscape and Visual | Appendix LV-001-012 |

1.2 Evaluation of impacts and effects

- 1.2.1 This appendix provides a quantitative assessment of construction noise and vibration impacts/effects and a qualitative assessment of likely significant effects, based on the impacts/effects identified and other local context information consistent with the scope and methodology defined for the Proposed Scheme.
- 1.2.2 Indirect effects arising from temporary changes in traffic patterns on the existing road network as a consequence of constructing the Proposed Scheme are also reported in this appendix, where they will occur within the study area (as defined in Volume 5: Appendix SV-001-000).
- 1.2.3 In undertaking the assessment of sound and vibration, consistent with Environmental Impact Assessment (EIA) Regulations and emerging National Planning Practice Guidance¹ a differentiation between impacts effects, adverse effects and significant effects is made. Further information is provided in Volume 5: Appendix SV-001-000.
- 1.2.4 The assessment of impacts and effects has been undertaken at assessment locations that are representative of a number of dwellings or other sensitive receptors. The Assessment Locations employed in this assessment are presented in the SV-03 Map Series (Volume 5, Sound, Noise and Vibration Map Book).

¹ Information is provided in the Department for Communities and Local Government's emerging National Planning Practice Guidance – Noise <http://planningguidance.planningportal.gov.uk>, (refer to the noise exposure hierarchy), as available on 14th October 2013.

2 Scope, assumptions and limitations

2.1 Regional and local policy guidance

2.1.1 The policy framework for sound, noise and vibration is set out in Volume 1 and in Volume 5: Appendix SV-001-000. As part of the engagement with local authorities through the Planning Forum Sub Group - Acoustics, information regarding any specific local planning guidance in respect of noise and vibration has been requested. Whilst no information has been received for this study area via the Planning Forum Sub Group - Acoustics, the following local policy guidance on noise and vibration has been identified:

- The Aylesbury Vale District Local Plan - Jan 2004.

2.1.2 This guidance has been considered as part of formulating the detailed application of the impact and significance criteria set out in Volume 5: Appendix SV-001-000.

2.2 Engagement

2.2.1 Details of engagement on a route-wide basis with the local and county authorities' Environmental Health Practitioners via the Planning Forum Sub Group - Acoustics, is set out in Volume 1.

2.2.2 Engagement with communities has been via the Community Forums, as set out in Volume 1. In respect of sound, noise and vibration the following discussions have taken place:

- general discussions in respect of local issues, including possible ways to avoid and mitigate the potential impacts of noise or vibration;
- September / October 2012: a specific presentation about sound, noise and vibration with discussion afterwards with one of the project team specialists;
- November / December 2012: specific request for the Community Forum regarding baseline sound monitoring locations;
- January / February 2013: feedback to the Community Forum on any proposed baseline monitoring locations; and
- verbal / written responses to questions and sound, noise and vibration.

2.3 Methodology

2.3.1 The methodology used for the assessment of airborne sound, ground-borne sound and vibration impacts and the determination of significant effects is defined in the Scope and Methodology Report (SMR) (Volume 5: Appendix CT-001-000/1). Further clarification regarding specific areas is presented in the SMR addendum (Volume 5: Appendix CT-001-000/2). Further information is contained in Volume 5: Appendix SV-001-000.

2.4 Assumptions

- 2.4.1 Route-wide assumptions are outlined in Volume 1 and are further detailed in Volume 5: Appendix SV-001-000. Local assumptions that apply to the assessment of construction sound noise and vibration within this area are set out in Volume 2: CFA Report 12.

2.5 Limitations

- 2.5.1 The route-wide limitations and the approach adopted to assure that they will not impact the robust assessment of sound, noise and vibration are presented in Volume 5: Appendix SV-001-000. No specific additional limitations are identified for this study area.

3 Environmental baseline

3.1 Existing baseline

- 3.1.1 Baseline sound level data has been collected at locations representative of the airborne sound-sensitive receptors. The existing and future baseline airborne sound levels derived from these measurements are given in Volume 5: Appendix SV-002-012. Details of the baseline data collection and the methodology are given in Volume 5: Appendix SV-001-000 and specifically for this study area in Volume 5: Appendix SV-002-012.

3.2 Future baseline

- 3.2.1 The assessment of noise from construction activities assumes a baseline year of 2017 which represents the period immediately prior to the start of the construction period. As a reasonable worst case, it has been assumed that no change in baseline sound levels will occur between the existing baseline (2012/13) and the future baseline year of 2017. The assessment of noise from construction traffic assumes a baseline year of 2021, representative of the middle of the construction period when the construction traffic flows are expected to be at their peak. Further information can be found in the Traffic and Transport assessment (Volume 5: Appendix TR-001-000).

4 Effects arising during construction

4.1 Introduction

4.1.1 The assessment is reported first for ground-borne sound and vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts and effects are presented. This is followed by the identification of significant effects and the evidence used to support these conclusions.

4.1.2 The structure of this assessment report is as follows:

- Avoidance and mitigation measures
- Quantitative identification of impact and effects
 - Ground-borne sound and vibration
 - residential
 - non-residential
 - Airborne sound
 - residential
 - non-residential
- Assessment of impacts and effects
 - residential receptors: direct effects – dwellings
 - residential receptors: direct effects – communities
 - residential receptors: indirect effects
 - non-residential receptors: direct effects
 - non-residential receptors: indirect effects
 - cumulative effects from the proposed scheme and other committed development

4.2 Avoidance and mitigation measures

4.2.1 These measures are set out in Volume 2: CFA Report 12.

4.3 Quantitative identification of impacts and effects

Ground-borne vibration

4.3.1 Assessment locations defined for the quantitative assessment of impacts are shown on Maps SV-03-024b to SV-03-027a (Volume 5, Sound, Noise and Vibration Map Book).

- 4.3.2 For each assessment location, the assessment results for residential and non-residential receptors are presented in Table 1 and Table 2. Explanation of the information in Table 1 and Table 2 is provided in Volume 5: Appendix SV-001-000, with the following additional notes:

	Where the significant effect column is highlighted, then a significant effect is identified at the referenced community, or individual receptor.
*	Significant effect – the quantitative impact methodology has identified either: <ol style="list-style-type: none"> 1) no impact at this receptor but further information (see assessment) has identified that a significant effect is nonetheless likely; or 2) an impact at this receptor which, based upon further qualitative receptor information, (see assessment text) does not give rise to a significant effect.
~	Significant effect – The forecast adverse effects are not considered to be significant on a community basis (further information on methodology is provided in Volume 5: Appendix SV-001-000).
A	Type of effect – annoyance
D	Type of effect – disturbance
Sd	Type of effect – sleep disturbance
Q	Type of effect – deterioration of acoustic quality
R	Type of receptor – residential
V1	Type of receptor: <p>(V1) vibration sensitive research and manufacturing, hospital, and university equipment;</p> <p>(V2) hotels, hospital wards and education dormitories;</p> <p>(V3) offices, schools and places of worship; or</p> <p>(V4) workshops.</p>
T	Receptor design – typical
S	Receptor design – special

Table 1: Assessment of construction induced ground-borne vibration at residential receptors


Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Peak particle velocity (PPV) [mm/s] on foundation	Typical/highest monthly indoor vibration dose value (VDV) [m/s ^{1.75}]		Construction activity resulting in highest forecast vibration levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [m]	Mitigation effect	
			Day (0700-2300)	Night (2300-0700)											
291320	Quainton, Aylesbury	0.18	0.09/0.09	-	Quainton south embankment - filing - medium roller.	NA	1	R	T		-	-	0.5	-	
298562	Lawn Hill, Quainton	0.59	0.25/0.25	-	Grendon Underwood embankment number 1 - filing - medium roller.	NA	3	R	T		-	-	0.25	-	

Table 2: Assessment of construction induced ground-borne vibration at non-residential receptors

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Peak particle velocity (PPV) [mm/s] on foundation	Typical/highest monthly indoor vibration dose value (VDV) [m/s ^{1.75}]		Construction activity resulting in highest forecast vibration levels and its duration (months)	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [m]	Mitigation effect	
298562	Lawn Hill, Quinton	0.59	Day (0700-2300)	Night (2300-0700)	Grendon Underwood embankment number 1 - filing - medium roller	B	2	V ₃	T		-	-	0.25	-	

Airborne sound: direct impacts and effects

- 4.3.3 Activities associated with the construction phases of the Proposed Scheme will generate airborne noise. The assessment of the likely impacts and significant effects as a result of the construction noise has considered the effects on:
- residential receptors, both as individual dwellings and communities; and
 - non-residential receptors, including quiet areas.
- 4.3.4 Volume 2: CFA Report 12 makes reference to any major construction activity during the evening and at night but the assessment has also considered the minor essential activities that will have to operate on a 24/7 basis for reasons of safety and engineering practicability (e.g. water pumps).
- 4.3.5 For each type of receptor, subject to the screening distances identified, and based upon supplied plant information from engineers, the typical and highest monthly $L_{pAeq,T}$ noise levels from construction activities have been calculated at the façade of all assessment locations, which are representative of a number of receptors in the study area.
- 4.3.6 The assessment results, impact criteria and significance criteria for the assessment of the scheme at residential and non-residential receptors are presented in Table 3 and Table 4 respectively.
- 4.3.7 The construction activity resulting in highest forecast noise levels is reported in Table 3 and Table 4 for each assessment location and time period, where the highest forecast noise level from any individual construction activity is above $L_{pAeq,T}$ 40dB during the daytime and evening periods and $L_{pAeq,T}$ 35dB during the night-time. Where the highest forecast noise level from any individual construction activity is less than $L_{pAeq,T}$ 40dB during the daytime and evening or $L_{pAeq,T}$ 35dB during the night-time no activities have been reported.
- 4.3.8 Explanation of the information within Table 3 and Table 4 is provided in Volume 5: Appendix SV-001-000, with the following additional notes:

 Where the significant effect column is highlighted, then a significant effect is identified at the referenced community, or individual non-residential receptor

- * Significant effect – the quantitative impact methodology has identified either:
 - 1) no impact at this receptor but further information (see assessment) has identified that a significant effect is nonetheless likely; or
 - 2) an impact at this receptor which, based upon further qualitative receptor information, (see assessment text) does not give rise to a significant effect.
- ~ Significant effect - The forecast adverse effects are not considered to be significant on a community basis (further information on methodology is provided in Volume 5: Appendix SV-001-000).
- A Type of effect – annoyance

D	Type of effect – disturbance
Sd	Type of effect – sleep disturbance
Q	Type of effect – deterioration of acoustic quality
R	Type of receptor - residential
G	Type of receptor: (G1) theatres, large auditoria and concert halls; (G2) sound recording and broadcast studios; (G3) places of meeting for religious worship, courts, cinemas, lecture theatres, museums and small auditoria or halls; (G4) schools, colleges, hospitals, hotels and libraries; or (G5) offices and general commercial premises.
T	Receptor design – typical
S	Receptor design - special
H	Existing environment – high existing ambient noise levels: daytime level more than 75dB, evening-time level more than 65dB or night-time level more than 55dB L_{pAeq} at the façade.
NI	Mitigation effect - identified as likely to qualify for noise insulation under the draft Construction Code of Practice (draft CoCP).
D,E,N	Impact duration (months) – duration of impact during the day (D), evening (E) or night (N).

Table 3: Assessment of construction noise at residential receptors

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
286675	Edgcott, Aylesbury	<40/45 [A]	-	-	Day: Benfields Green overbridge - finishes	NA	2	R	T	-	-	-	-	-		
286717	Edgcott, Aylesbury	<40/44 [A]	-	-	Day: Sheephouse Green overbridge - construct east abutment (B)	NA	1	R	T	-	-	-	-	-		
290161	Taylor'S Corner, Waddesdon	42/51 [A]	-	-	Day: Haul route movements - on site	NA	10	R	T	-	-	-	-	-		
290385	Doddershall, Quainton	53/59 [A]	-	-	Day: Haul route movements - on site	NA	1	R	T	-	-	-	-	-		
290441	Doddershall, Quainton	44/52 [A]	-	-	Day: Haul route movements - on site	NA	1	R	T	-	-	-	-	-		
290916	Bicester Road, Waddesdon	43/50 [A]	-	-	Day: Haul route movements - on site	NA	2	R	T	-	-	-	-	-		
291320	Quainton, Aylesbury	51/63 [B]	-	-	Day: Haul route movements - on site	NA	1	R	T	H	-	-	-	-		
291382	Station Road, Quainton	45/53 [A]	-	-	Day: Haul route movements - on site	NA	9	R	T	-	Y	-	-	-		
291492	Doddershall, Quainton	41/49 [A]	-	-	Day: Haul route movements - on site	NA	1	R	T	-	-	-	-	-		

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
291511	Station Road, Quainton	47/55 [B]	-	-	Day: Haul route movements - on site	NA	2	R	T	H	-	-	-	-		
291754	Goss Avenue, Waddesdon	<40/46 [C]	-	-	Day: Haul route movements - on site	NA	20	R	T	H	-	-	-	-		
291885	Sharps Close, Waddesdon	<40/45 [A]	-	-	Day: Haul route movements - on site	NA	64	R	T	-	-	-	-	-		
292062	Warmstone Close, Waddesdon	<40/46 [A]	-	-	Day: Haul route movements - on site	NA	41	R	T	-	-	-	-	-		
292369	Sharps Close, Waddesdon	<40/46 [C]	-	-	Day: Haul route movements - on site	NA	30	R	T	H	-	-	-	-		
292489	High Street, Waddesdon	<40/46 [>C]	-	-	Day: Haul route movements - on site	NA	9	R	T	H	-	-	-	-		
292667	High Street, Waddesdon	<40/46 [>C]	-	-	Day: Haul route movements - on site	NA	45	R	T	H	-	-	-	-		
293404	Frederick Street, Waddesdon	<40/46 [B]	-	-	Day: Haul route movements - on site	NA	21	R	T	H	-	-	-	-		
293570	High Street, Waddesdon	<40/47 [A]	-	-	Day: Haul route movements - on site	NA	56	R	T	-	-	-	-	-		

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
293650	Little Britain, Waddesdon	<40/47 [A]	-	-	Day: Haul route movements - on site	NA	39	R	T	-	-	-	-	-		
293784	Anstey Close, Waddesdon	41/48 [A]	-	-	Day: Haul route movements - on site	NA	5	R	T	-	-	-	-	-		
293796	Anstey Close, Waddesdon	40/47 [C]	-	-	Day: Haul route movements - on site	NA	4	R	T	H	-	-	-	-		
293964	Baker Street, Waddesdon	<40/46 [C]	-	-	Day: Haul route movements - on site	NA	17	R	T	H	-	-	-	-		
294049	Quainton Road, Waddesdon	50/55 [A]	-	-	Day: Haul route movements - on site	NA	1	R	T	-	-	-	-	-		
294165	Quainton Road, Waddesdon	44/52 [A]	-	-	Day: Haul route movements - on site	NA	3	R	T	-	-	-	-	-		
294193	Quainton Road, Waddesdon	42/49 [B]	-	-	Day: Haul route movements - on site	NA	10	R	T	H	-	-	-	-		
294430	Frederick Street, Waddesdon	<40/47 [A]	-	-	Day: Haul route movements - on site	NA	55	R	T	-	-	-	-	-		
294499	Frederick Street, Waddesdon	41/48 [A]	-	-	Day: Haul route movements - on site	NA	89	R	T	-	-	-	-	-		

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
294777	Quainton Road, Waddesdon	41/49 [A]	-	-	Day: Haul route movements - on site	NA	15	R	T	-	Y	-	-	-		
294910	New Street, Waddesdon	<40/47 [A]	-	-	Day: Haul route movements - on site	NA	21	R	T	-	-	-	-	-		
295086	Little Britain, Waddesdon	41/48 [A]	-	-	Day: Haul route movements - on site	NA	9	R	T	-	-	-	-	-		
295181	Anstey Close, Waddesdon	41/48 [A]	-	-	Day: Haul route movements - on site	NA	8	R	T	-	-	-	-	-		
295222	Little Britain, Waddesdon	42/49 [A]	-	-	Day: Haul route movements - on site	NA	31	R	T	-	-	-	-	-		
295618	Station Road, Quainton	<40/46 [A]	-	-	Day: Haul route movements - on site	NA	20	R	T	-	-	-	-	-		
295689	Station Road, Quainton	<40/47 [A]	-	-	Day: Haul route movements - on site	NA	15	R	T	-	-	-	-	-		
295776	Station Road, Quainton	40/48 [A]	-	-	Day: Haul route movements - on site	NA	14	R	T	-	-	-	-	-		
295872	Station Road, Quainton	43/50 [A]	-	-	Day: Haul route movements - on site	NA	11	R	T	-	-	-	-	-		
296529	Quainton,	41/47	-	-	Day: Ditchburn's Green overbridge - finishes	NA	1	R	T	-	-	-	-	-		

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
	Aylesbury	[A]														
296784	Edgcott, Aylesbury	44/54 [A]	-	-	Day: Benfields Green overbridge - construction works - substructure	NA	1	R	T	-	-	-	-	-		
296808	Edgcott, Aylesbury	47/60 [A]	-	-	Day: Benfields Green overbridge - construction works - substructure	NA	1	R	T	-	-	-	-	-		
296850	Calvert Road, Middle Claydon	<40/43 [A]	-	-	Day: Grendon Underwood embankment 2, culvert number 1 - drainage/culvert works	NA	1	R	T	-	Y	-	-	-		
296997	Doddershall, Quainton	<40/47 [A]	-	-	Day: Edgcott Road overbridge - construction works - substructure	NA	2	R	T	-	-	-	-	-		
297008	Quainton, Aylesbury	55/60 [A]	-	-	Day: Edgcott Road overbridge - finishes	NA	2	R	T	-	-	-	-	-		
297063	Calvert Road, Middle Claydon	41/47 [A]	-	-	Day: Ditchburn's Green overbridge - construction works - substructure	NA	1	R	T	-	Y	-	-	-		
297078	Doddershall, Quainton	45/54 [A]	-	-	Day: Haul route movements - on site	NA	2	R	T	-	-	-	-	-		
297144	Doddershall, Quainton	46/56 [A]	-	-	Day: Haul route movements - on site	NA	3	R	T	-	-	-	-	-		
297166	Doddershall, Quainton	47/54 [A]	-	-	Day: Haul route movements - on site	NA	1	R	T	-	-	-	-	-		

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
297249	Quainton, Aylesbury	<40/48 [A]	-	-	Day: Haul route movements - on site	NA	1	R	T	-	-	-	-	-		
297256	Quainton, Aylesbury	<40/46 [A]	-	-	Day: Haul route movements - on site	NA	2	R	T	-	-	-	-	-		
298562	Lawn Hill, Quainton	51/59 [A]	-	-	Day: Grendon Underwood embankment number 1 - site clearance	NA	3	R	T	-	-	-	-	-		
310373	Aylesbury Road, Waddesdon	50/55 [B]	-	-	Day: Blackgrove Road overbridge - finishes	NA	1	R	T	H	-	-	-	-		
310408	Blackgrove Road, Waddesdon	57/62 [A]	-	-	Day: Waddesdon South cutting - cutting - excavation	NA	1	R	T	H	-	-	-	-		
310474	Blackgrove Road, Waddesdon	47/54 [A]	-	-	Day: Haul route movements - on site	NA	1	R	T	H	-	-	-	-		
310687	Waddesdon, Aylesbury	45/52 [A]	-	-	Day: Haul route movements - on site	NA	2	R	T	-	-	-	-	-		
310700	Fleet Marston, Aylesbury	42/52 [A]	-	-	Day: Haul route movements - on site	NA	1	R	T	-	-	-	-	-		
310792	Waddesdon, Aylesbury	44/50 [A]	-	-	Day: Haul route movements - on site	NA	3	R	T	-	-	-	-	-		

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
700346	Blackgrove Road, Waddesdon	56/61 [A]	-	-	Day: Haul route movements - to and from road	NA	1	R	T	H	-	-	-	-		
700348	Aylesbury Road, Waddesdon	46/54 [A]	-	-	Day: Haul route movements - on site	NA	1	R	T	-	-	-	-	-		

Table 4: Assessment of construction noise at non-residential receptors

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
286717	Edgcott, Aylesbury	<40/44	-	-	Day: Sheephouse Green Overbridge - construct east abutment (B)	B	2	G5	T	-	-	-	-	-	
289842	Unnamed Road, Quainton	47/55	-	-	Day: Haul route movements - on site	B	1	G3	T	H	-	-	-	-	
289842	Unnamed Road, Quainton	47/55	-	-	Day: Haul route movements - on site	B	2	G5	T	H	-	-	-	-	
291492	Doddershall, Quainton	41/49	-	-	Day: Haul route movements - on site	B	9	G5	T	-	-	-	-	-	
291511	Station Road, Quainton	47/55	-	-	Day: Haul route movements - on site	B	1	G5	T	H	-	-	-	-	
291754	Goss Avenue, Waddesdon	<40/46	-	-	Day: Haul route movements - on site	B	1	G4	T	H	-	-	-	-	
292062	Warmstone Close, Waddesdon	<40/46	-	-	Day: Haul route movements - on site	B	1	G5	T	-	-	-	-	-	
292667	High Street, Waddesdon	<40/46	-	-	Day: Haul route movements - on site	B	5	G5	T	H	-	-	-	-	
293404	Frederick Street,	<40/46	-	-	Day: Haul route movements - on site	B	1	G4	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
	Waddesdon															
293404	Frederick Street, Waddesdon	<40/46	-	-	Day: Haul route movements - on site	B	2	G5	T	H	-	-	-	-		
293570	High Street, Waddesdon	<40/47	-	-	Day: Haul route movements - on site	B	1	G5	T	-	-	-	-	-		
294430	Frederick Street, Waddesdon	<40/47	-	-	Day: Haul route movements - on site	B	1	G5	T	-	-	-	-	-		
294777	Quainton Road, Waddesdon	41/49	-	-	Day: Haul route movements - on site	B	1	G5	T	-	Y	-	-	-		
294910	New Street, Waddesdon	<40/47	-	-	Day: Haul route movements - on site	B	4	G5	T	-	-	-	-	-		
296202	Unnamed Road, Quainton	42/50	-	-	Day: Haul route movements - on site	B	1	G4	T	-	-	-	-	-		
296202	Unnamed Road, Quainton	42/50	-	-	Day: Haul route movements - on site	B	1	G5	T	-	-	-	-	-		
298562	Lawn Hill, Quainton	51/59	-	-	Day: Grendon Underwood embankment number 1 - site clearance	B	2	G5	T	-	-	-	-	-		

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
700348	Aylesbury Road, Waddesdon	46/54	-	-	Day: Haul route movements - on site	B	1	G5	T	-	-	-	-	-	
709515	High Street, Waddesdon	<40/45	-	-	Day: Haul route movements - on site	B	1	G4	T	H	-	-	-	-	
709516	Baker Street, Waddesdon	<40/46	-	-	Day: Haul route movements - on site	B	1	G4	T	H	-	-	-	-	
709517	Baker Street, Waddesdon	<40/43	-	-	Day: Haul route movements - on site	B	2	G4	T	-	-	-	-	-	

Airborne sound: indirect effects

- 4.3.9 Construction road traffic associated with the construction phases of the Proposed Scheme will generate airborne noise. The change in traffic noise level at a reference distance of 10m from the edge of the nearside carriageway resulting from the presence of construction traffic for a given road has been predicted, based upon traffic information for the Proposed Scheme. The results for the roads where potentially significant effects could arise are presented in Table 5.
- 4.3.10 Explanation of the information within Table 5 is provided in Volume 5: Appendix SV-001-000, with the following additional notes:



Where the significant effect column is highlighted in dark red, then a significant effect is identified on nearby communities or individual receptors

Change values



Yellow denotes a minor impact – a change of between 3 and 5dB or between 1 and 3dB where a high existing sound level is identified



Orange denotes a moderate impact – a change of between 5 and 10dB or between 3 and 5dB where a high existing sound level is identified



Red denotes a major impact – a change of more than 10dB or more than 5dB where a high existing sound level is identified

Table 5: Assessment of construction traffic noise levels

Road name	Link	Future baseline sound level (dB)	Future baseline sound level + construction traffic (dB)	Change (dB)	Significant effect
		Daytime $L_{pAeq,16hr}$ 0700-23:00 free-field	Daytime $L_{pAeq,16hr}$ 0700-2300 free-field		
A41	West of Blackgrove Road - Waddesdon	73.4	74.6	+1.2	*
Grendon Rd / Buckingham Road	Passing through Edgcott	63.9	69.1	+5.2	CSV12-Co1 CSV12-No1
The Broadway	Grendon Underwood	66.7	71.2	+4.5	CSV12-No2

4.4 Assessment of significant effects

Residential receptors: direct effects – individual dwellings

- 4.4.1 Taking account of the avoidance and mitigation measures no residential buildings are forecast to experience noise levels higher than the noise insulation trigger levels as defined in the draft CoCP. For daytime construction the trigger level is an equivalent continuous noise level of 75dB².
- 4.4.2 There are landscape earthworks in relatively close proximity to isolated residential dwellings in Quainton, Waddesdon and Chipping Warden (40 to 80m), however, it has been judged that, following the application of BPM and appropriate mitigation, the noise insulation criteria from the draft CoCP would not be exceeded at these properties.

Residential receptors: direct effects – communities

- 4.4.3 The avoidance and mitigation measures in this area will avoid airborne construction noise adverse effects¹ on the majority of receptors and communities. Residual temporary noise or vibration effects are identified later in this section.
- 4.4.4 With regard to noise outside dwellings, the assessment of temporary effects takes account of construction noise relative to existing sound levels.
- 4.4.5 In locations with lower existing sound levels³, construction noise effects are likely to be caused by changes to noise levels outside dwellings. These may be considered by the local community as an effect on the acoustic character of the area and hence be perceived as a change in the quality of life. These effects are considered to be significant when assessed on a community basis taking account of the local context¹.
- 4.4.6 In this area, the mitigation measures reduce the effects of outdoor construction noise on the acoustic character around the local residential communities such that the adverse effects identified are considered to be not significant.
- 4.4.7 Although not included in the quantitative assessment, the construction of the Sheephouse Wood mitigation structure – for bat and other wildlife mitigation purposes has been deemed to not cause any impacts or significant effects at nearby residential properties.

Residential receptors: indirect effects

- 4.4.8 Construction road traffic is likely to cause adverse noise effects¹ on residential receptors along the Grendon Road / Buckingham Road where they pass through Edgcott (CSV12-Co2) with approximately 40 dwellings located immediately adjacent to this road forecast to experience an increase in outdoor day time noise levels of around 5dB during the months of peak activity (further information is provided in Section 12: Traffic and Transport).

² L_{pAeq,0800-1800} measured outdoors at the building façade.

³ Further information is provided in Volume 5: Appendix SV-001-000.

- 4.4.9 These adverse effects¹ represent a change in the acoustic character of the area that is likely to cause a perceived change in the quality of life, and are considered significant when assessed on a community basis taking account of the local context.
- 4.4.10 A change in noise level has been identified on residential receptors arising from construction traffic on the following roads, however significant effects are unlikely to occur:
- On the A41 (west of Blackgrove Road) (Waddesdon) approximately 33 dwellings are located immediately adjacent to the road which is forecast to experience an increase in outdoor daytime noise levels of around 1dB during the peak months. This effect is not likely to be significant as the 'high' noise levels are only likely to be incident on the front of properties, the majority of property will have sheltered external spaces/facades to the rear, where levels would be below the 'high' threshold and in this case a 1dB change would not be judged significant.
 - The Broadway (Grendon Underwood) has approximately four dwellings located immediately adjacent to the road which is forecast to experience an increase in outdoor day time noise levels of around 5dB during the peak months. Taking account of the number of properties impacted, this is not likely to be a significant community effect.

Non-residential receptors: direct effects

- 4.4.11 Significant construction noise or vibration effects¹ on non-residential receptors are unlikely to occur in this area.
- 4.4.12 Detailed information regarding landscape earthworks was not available at the time of the quantitative assessment. Therefore a screening assessment of the noise arising from these works on non-residential receptors has been undertaken by determining the minimum distance from the works site boundary at which the onset of a construction noise impact would be expected. In accordance with the CoCP these effects will be subject to review as part of the Section 61⁴ application process for the construction works. The screening assessment used represents a worst case scenario. The assessment has resulted in identification of no likely significant effects on residential receptors.
- 4.4.13 Although not included in the quantitative assessment, the construction of the Sheephouse Wood mitigation structure – for bat and other wildlife mitigation purposes has been deemed to not cause any impacts or significant effects at nearby non-residential properties.

Non-residential receptors: indirect effects

- 4.4.14 On a worst case basis, construction traffic is likely to cause significant indirect noise effects at non-residential receptors along the following local roads:

⁴ Section 61 Agreement under the Control of Pollution Act, 1974 (c.40). London, Her Majesty's Stationery Office.

- Grendon Road / Buckingham Road where they pass through Edgcott affecting Edgcott Village Hall (CSV12-No4). This effect is associated with a forecast increase in way side noise levels of around 5dB in the months of peak activity (further information on the construction traffic is provided in Section 12: Traffic and Transport); and
- The Broadway in Grendon Underwood affecting St Leonard's Church (CSV12-No5). This effect is associated with a forecast increase in wayside noise levels of around 5dB in the months of peak activity (further information on the construction traffic is provided in Section 12: Traffic and Transport).

4.4.15 A change in noise level has been identified on residential receptors arising from construction traffic on the following roads, however significant effects are unlikely to occur:

4.4.16 It is judged that the change in noise level on the A41 (west of Blackgrove Road) (Waddesdon) would not be a significant effect on non-residential receptors.

Cumulative effects from the Proposed Scheme and other committed development.

4.4.17 This assessment has considered the potential cumulative construction noise effects of the Proposed Scheme and other committed developments⁵. In this area, there are a small number of committed developments, but these are too far from the receptors affected by the Proposed Scheme to add significant noise impacts. Accordingly, construction noise from the Proposed Scheme is unlikely to result in any significant cumulative noise effects.

⁵ Refer to section 2 Volume 2 CFA report 12 for Waddesdon and Quainton.

5 References

Control of Pollution Act 1974 (c.40). London, Her Majesty's Stationery Office.